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ScienceDirect

Energy Procedia 4 (2011) 6256–6262

Energy Procedia

www.elsevier.com/locate/procedia

GHGT-10

Road-Testing the Outreach Best Practices Manual: Applicability for Implementation of the Development Phase Projects by the Regional Carbon Sequestration Partnerships

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Abstract

Geologic carbon dioxide (CO_2) storage verification tests by the U.S. Department of Energy's (DOE's) seven Regional Carbon Sequestration Partnerships (RCSPs) provided the experience base for the *Public Outreach and Education for Carbon Storage Projects*, a best practices manual, published in December 2009. This paper summarizes these outreach best practices; discusses their application in Aquistore, a greenfield CO_2 storage project under way in western Canada; and reviews the implications for applying the best practices to new projects during the Development Phase of the DOE's RCSP Program.

Keywords: Outreach; CO_2; CCS; Sequestration; Communications

Introduction

CO_2 capture and storage (CCS) is emerging as a viable option for mitigating the CO_2 emissions from large-scale stationary sources such as power plants, refineries, and natural gas-processing facilities. Hundreds of CCS projects are expected to be conducted worldwide in the coming decades

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doi:10.1016/j.egypro.2011.02.639

to meet the needs for CO_2 management. CCS projects that employ geologic sequestration (GS). (Storing the CO_2 deep underground in an appropriate geologic setting) is referred to in this paper as a CCS–GS project.)

The individual technologies that make up CCS–GS are largely proven in other applications; however, the combination of the technologies, capturing, transporting and storing CO_2 in the subsurface, has little historic precedence. The closest analog is found in the oil and gas industry where the transportation and injection components of the technology train have been used since the 1970s in enhanced oil recovery (EOR) projects and are well established. Recently, some CCS–GS projects have encountered public opposition based on objections to continued use of coal, the perception of inadequate safety, and concerns that CCS–GS could be substituted for other carbon mitigation actions such as increased use of renewable energy sources.

Since 2003, the seven regional public/private sector partnerships under DOE's RCSP Program have been conducting CCS–GS research, building capabilities, and engaging stakeholders to provide factual information about CCS–GS technologies as well as assessing potential sites for application, and taking part in field demonstrations of the technology (see box).

Incorporating Outreach into the DOE's RCSP Program In 2003, DOE initiated the RCSP Program to identify and test the best approaches to carbon storage in each of seven regions spanning the United States and part of Canada. Outreach has been a core element of the program during each of the program stages:

- Characterization Phase (2003–2005): The RCSPs focused on general outreach as they assessed opportunities for carbon storage and potential infrastructure needs and costs in their regions.
- Validation Phase (2005–2010): The RCSPs conducted both general and project-level outreach as they undertook approximately 20 geologic storage field demonstrations in a variety of storage zones (saline formations, depleted oil zones, deep unminable coal seams and basalt formations) involving a variety of injection volumes (50–900,000 tons of CO_2).
- Development Phase (2008–2017): The RCSPs are developing and undertaking outreach efforts in support of commercial-scale CCS–GS projects. Up to ten projects will be conducted throughout the country. The 10-year projects include site characterization, site preparation, injection of CO_2, postinjection monitoring, and closure.

Each of the seven RCSPs has an outreach program and a dedicated outreach lead. The Partnerships collaborate and exchange lessons learned through an Outreach Working Group (OWG). The goal is to share technically sound information with key stakeholders, obtain feedback, and develop outreach and education materials and practices to support informed public engagement on CCS–GS projects. First-hand experience in outreach for CCS–GS was gained by the partnerships through the implementation of approximately 20 small-scale projects in the United States and Canada during the Validation Phase of the RCSP Program.

In the summer of 2009, the OWG began to assemble lessons learned during the first 6 years of outreach efforts. The results of this discussion were published in December 2009 in the DOE best practices manual entitled *Public Outreach and Education for Carbon Storage Projects* (Outreach BPM) [1].

CCS–GS projects bring together groups representing CO_2 sources, CO_2 transportation, and CO_2 storage, and CO_2 storage site-monitoring expertise. The manual is designed to assist project developers in building an effective multipartner outreach team and in developing strategies for

effective outreach efforts for the life of a CCS–GS project. This paper provides a brief overview of the RCSP's best outreach practices as a basis for an overall outreach program. The paper then provides lessons learned by projects adopting these approaches in the few months since they have been publicly available.

RCSP's Best Practices for Outreach

For the Partnerships, an important goal of public outreach is to gain a fair hearing for CCS–GS applications within the context of other carbon management options, both at the regional and project level and ultimately at the national and international levels. Another goal is to gain community feedback that can improve project design and implementation. The best practices combine general outreach experience with the framework of CCS–GS projects. The basic themes that flow through the BPM include providing technically sound information, respect for stakeholders, and the open (and two-way) sharing of information. Perhaps most importantly, the Partnerships confirmed the need to be proactive in outreach efforts.

The Outreach BPM primarily addresses the project-level activities, where effective outreach begins well before the active onset of the project, continues through the close of the project, and involves every individual on the project team. Further, the outreach scope encompasses an array of activities through which information about CCS–GS storage projects is shared with stakeholders and feedback is considered and addressed.

The Partnership experience suggests that the following elements contribute to successful outreach efforts: a strong, capable outreach team; a productive working relationship with the project's various teams; extensive preparation that involves listening to the community; readily accessible information that explains the project and addresses local concerns; frequent monitoring of the project and outreach team performance; and the flexibility to make changes if conditions warrant. The ten best practices in the manual are summarized below.

Best Practice 1: Integrate Public Outreach with Project Management – The most valuable lesson learned by the RCSPs is that public outreach needs to be incorporated as an integral component of a CO_2 storage project – ideally from the time of project conceptualization, through to closure and beyond. This strategy ensures that sufficient time for developing relationships with a community and its stakeholders is built into the project during its formative stages.

Best Practice 2: Establish a Strong Outreach Team – Everyone on the project plays a role in shaping public perceptions of a CCS–GS project, and it is optimal to include individuals on the outreach team who are involved in and knowledgeable about the technical details of the project, as well as individuals who have backgrounds in communication, education, and community relations. In cases where multiple companies are involved, it is invaluable to identify the company whose reputation in the community is conducive to constructive communication. The core outreach group needs the authority to configure workable external communication capability as well as internal communications such as training, cross-group communication, project updates, and information-sharing sessions.

Best Practice 3: Identify Key Stakeholders – Stakeholders are parties who believe they are most affected by the decisions regarding a CO_2 storage project. Stakeholders need to be identified upfront as a first step in proactive engagement. At the local level, these may include elected and safety officials, regulators, landowners, citizens, civic groups (including environmental, business, and religious groups), business leaders, media, and community opinion leaders. The criteria for identifying and interacting with local as well as state, regional, and national groups are discussed in the BPM. The RCSPs have also found that new stakeholders emerge over the lifetime of a project.

Best Practice 4: Conduct and Apply Social Characterization – The partnerships recommend the use of social characterization (SC)—an approach for gathering and evaluating information to obtain an accurate portrait of stakeholder groups, their perceptions, and their concerns about CO_2 storage. Among the partnerships, SC was used to identify the factors that will likely influence public perceptions of CO_2 storage within a specific community. In addition, SC enables the project team to develop better insights into the form and delivery of information. SC should be initiated in the early stages of a CO_2 storage project and continue throughout the project. The Outreach BPM contains strategies and resources to carry out this type of activity.

Best Practice 5: Develop Outreach Strategy and Communication Plan – The outreach strategy refers to the overall plan to undertake, manage, and monitor project outreach throughout the project. An effective outreach strategy is tailored to the stakeholders for a particular project, builds relationships among the outreach team members, gives voice to the project partners with respect to their outreach objectives, and incorporates the information and approaches derived from applying Best Practices 1 through 4. A component of the outreach strategy is a communications plan that focuses on representing the project directly to the public and through the media. Experience indicates that the communications plan should include plans for everyday communications, high visibility communication periods, and communications in the unlikely event of a crisis. Templates and examples are provided in the Outreach BPM.

Best Practice 6: Key Messages – CCS–GS can seem technically complex to those who are not familiar with the technology. In trying to be precise and accurate, project personnel need to guard against overly complicated messaging. The BPM provides points to consider in developing core materials and resources to inform stakeholders regarding the state of the technology, the way sites are chosen, and project time lines and activities. These are intended to be adopted to meet the local considerations identified in Best Practice 4.

Best Practice 7: Tailor Outreach Materials to Audiences – The RCSPs found a variety of materials useful in their outreach efforts. These included fact sheets, Microsoft PowerPoint briefing slides, physical models, videos, Web sites, posters, and other informational materials that are available as examples or for use by others. These materials were used to describe DOE's RCSP Program, provide specific details about each RCSP, and outline the general processes and mechanics involved in CO_2 storage. The lesson from this activity has been to craft materials that are readily understandable, jargon-free, and contain information that is technically accurate and addresses issues of concern to the audience (e.g., safety). Links and examples of these materials are provided in the BPM.

Best Practice 8: Actively Manage the Outreach Program Throughout the Life of the Project – Sharing information about a CO_2 storage project and soliciting input from stakeholders requires ongoing effort. The project team must be aware of its role in outreach and seek out opportunities to engage stakeholders and make an effort to inform the media and respond to media requests for information. This proactive engagement, project openness, and transparency are the essence of successful outreach.

Best Practice 9: Monitor Outreach Performance – The purpose of monitoring the performance of the outreach program is to understand how the community perceives the project and gauge the effectiveness of the outreach activities over time. Monitoring can also help identify any misconceptions about the project or CO_2 storage and develop outreach strategies to correct them. Feedback and monitoring are needed on an ongoing basis to aid in matching outreach efforts to the different phases of the project. Monitoring strategies are discussed in the BPM.

Best Practice 10: Be Flexible! – It is critical that the outreach team be ready to adapt to project phases, communicate unexpected information regarding the site characteristics, direction of the project, and other conditions that may have a strong influence on the public's perception of CO_2 storage during the implementation of the project in question.

Aquistore – Incorporating the RCSP Best Practices

Conceived in 2009, the Aquistore Project is an integrated carbon capture, transport, injection, measurement, monitoring, and verification project located in the western Canadian province of Saskatchewan. Characterization of the deep saline formation began in 2009, and selection of the injection well site is scheduled for late 2010, with drilling to begin in early 2011. Pipeline construction will be completed in time for delivery of the CO_2 expected in early 2013.

The Petroleum Technology Research Centre (PTRC), the project lead, has had a decade of technical experience in CCS–GS as the lead in the International Energy Agency Greenhouse Gas Weyburn–Midale CO_2 Monitoring and Storage Project, the largest CCS–GS project in the world and the site of commercial CO_2 EOR operations. Weyburn–Midale is a CCS–GS project that is associated with a long-term commercial oil field EOR project involving a CO_2 source (Basin Electric Cooperative's Dakota Gasification facility in Beulah, North Dakota) and two oil companies (Cenovus and Apache). Although the CO_2 is from an anthropogenic source and the GS is significant, the focus of the operation is the production of additional oil from a mature oil field that had been active since the 1950s.

In contrast to the three partners involved in the operations at Weyburn, the Aquistore Project involves a larger number of partners participating in construction of the project (Schlumberger, SaskEnergy, SaskPower, Enbridge, Consumers' Co-operative Refineries Limited, PTRC). It is a greenfield site and is designed exclusively for the subsurface long-term storage of CO_2 in a saline reservoir. Because of these characteristics, it was expected that outreach for the Aquistore Project would be different than the outreach for the Weyburn–Midale project, where the local community has viewed CO_2 as part of the oil field operations. For Aquistore, outreach would include managing the communications for the entire project, from conceptualization to closure, including all aspects of capture, transport, site selection, permitting, site characterization, injection well drilling, operations, and long-term storage.

PTRC had convened a communications panel comprising all of the partner companies and professionals with significant outreach experience in major utility and pipeline projects. *However, even as a group, panel members did not have experience with planning and implementing outreach for a standalone commercial greenfield CCS–GS operation.* At about the same time, the Outreach BPM became available, and the Aquistore group utilized it to revamp its outreach planning effort. In particular, the group identified three elements that helped with its effort [2]:

1. The BPM offered a common starting point for the diverse members of the panel and facilitated communication within the panel.
2. The BPM addressed the lifecycle of a greenfield project, helping the panel to efficiently consider the full range of expected project milestones. In particular, the public outreach process flowchart was noted as offering a useful structure for arranging the overall communications plan for Aquistore.
3. The BPM templates and materials supported a fully integrated CCS–GS project — one that includes capture, transport, injection, and long-term storage with attendant monitoring and verification. By using these materials, the panel was able to move directly to delineating activities for the full lifecycle of the planned project.

The Aquistore Communications Plan, a working document incorporating key elements of the Outreach BPM, was finalized in February of 2010, ahead of the public outreach required for the start of well site selection. At this time, the project is in its 18th month of development. The first open house related to the project was held in August of 2010. A public outreach Web site for the project is in the final stages of development.

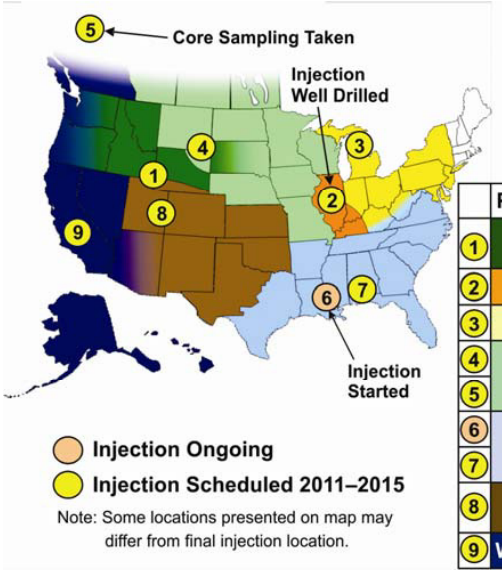
The Communications Panel for Aquistore has noted that DOE's BPM provided a solid, step-wise approach to planning communications for Aquistore. The nine best practices led to the plan, and the tenth (flexibility) will perhaps be most important as the next stages of the project (pipeline construction, capture facilities) unfold.

Updating the Outreach BPM

The practices proposed in the Outreach BPM provide a framework to guide project developers. They are not proposed as a rigid checklist but as a set of considerations that a project developer can assess in developing a project. Within the RCSP Program, there has been an array of public reactions to CCS–GS projects. In some cases, the research projects were embraced and supported by the community, in other cases there was almost no reaction, and in still others there has been opposition. As indicated in the Outreach BPM:

> "Conducting effective public outreach will not necessarily assure project success, but underestimating its importance can contribute to delays, increased costs, and community ill will. Effective public outreach involves listening, sharing information, and addressing concerns through proactive community engagement. The intent of the [BPM] is to facilitate project success and boost the effectiveness of outreach efforts."

The RCSP Program is now in the Development Phase, and each of the partnerships is implementing at least one pre-commercial-scale project as indicated in Figure 1.



EERC DD38808.CDR

	Partnership	Geologic Province	Type
1	Big Sky	Triassic Nugget Sandstone/ Moxa Arch	Saline
2	MGSC	Deep Mt. Simon Sandstone	Saline
3	MRCSP	St. Peter Sandstone	Saline
4	PCOR	Bell Creek Field	Oil Bearing
5		Devonian Carbonate Rock	Saline
6	SECARB	Lower Tuscaloosa Formation	Saline
7		Paluxy Formation	
8	SWP	Regional Jurassic and Older Formations	Saline
9	WESTCARB	Central Valley	Saline

Figure 1 RCSP Phase III: Development-phase large-scale geologic tests.

The OWG will continue to conduct project-specific CCS–GS outreach and draw from those experiences to review the lessons learned in applying the best practices with the intent of updating them as warranted and supplementing the materials with further insights on the use of community feedback in project design and implementation.

Summary

The RCSP Outreach BPM, drawn from experiences during approximately 20 field verification tests in varying locations and geologies, provides a framework for project developers to conduct outreach based on the specific characteristics of their project and the community in which they hope to locate these projects in developing and implementing an outreach program. The BPM has proved useful to project developers in a greenfield CCS–GS application in Canada and is being used to configure RCSP Development Phase commercial-scale demonstrations in locations around the United States and in Canada (Figure 1). One of the key practices being adopted or considered by all of the Partnerships is the integration of outreach with project management from the start of project planning. Such integration leads to proactive engagement of many members of the project team in public outreach and can help the team work constructively with a community to implement a project. It is important to note that even the best outreach efforts cannot guarantee public acceptance of a project; however, outreach plays a critical role in helping to ensure that there are open lines of communication with stakeholders and plenty of opportunities to identify and address their concerns. The Outreach BPM practices will continue to be "road tested" during the Development Phase and in other applications and will be updated based on these experiences.

Acknowledgments

This material is based upon work supported by the Department of Energy National Energy Technology Laboratory under Award Number DE-FC26-05NT42592.

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